RED SEAL

THE INTERPROVINCIAL STANDARDS RED SEAL PROGRAM

National Occupational Analysis

2011 | Bricklayer

Human Resources and Skills Development Canada
Ressources humaines et Développement des compétences Canada
Canada

Occupational Analyses Series

Bricklayer

2011

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FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis (NOA) as the national standard for the occupation of Bricklayer.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources and Skills Development Canada (HRSDC) sponsors a program, under the guidance of the CCDA, to develop a series of NOAs.

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

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This analysis was prepared by the Workplace Partnerships Directorate of HRSDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the NOA development team of the Trades and Apprenticeship Division. Johann Steinmann for the host jurisdiction of British Columbia also participated in the development of this NOA.

TABLE OF CONTENTS

FOREWORD			I
ACKNOWLEDGEMENTS			II
TABLE OF CONTENTS			III
LIST OF PUBLISHED NATIONAL OCCUPATIONAL ANALYSES			VI
STRUCTURE OF ANALYSIS			VIII
DEVELOPMENT AND VALIDATION OF ANALYSIS			X
ANALYSIS			
SAFETY			3
SCOPE OF THE BRICKLAYER TRADE			4
OCCUPATIONAL OBSERVATIONS			6
ESSENTIAL SKILLS SUMMARY			7
BLOCK A	**COMMON OCCUPATIONAL SKILLS**		
	Task 1	Performs safety-related functions.	9
	Task 2	Uses and maintains tools and equipment.	11
	Task 3	Uses scaffolding.	13
	Task 4	Organizes work.	15
BLOCK B	**GENERAL MASONRY PRACTICES**		
	Task 5	Performs substrate preparation.	18
	Task 6	Constructs masonry.	21
	Task 7	Uses mortars, grouts and adhesives.	24

BLOCK C	**MASONRY SYSTEMS**		
	Task 8	Builds masonry walls.	27
	Task 9	Builds horizontal masonry surfaces.	30
	Task 10	Builds and installs prefabricated masonry units. **(NOT COMMON CORE)**	31
	Task 11	Installs surface-bonded masonry units.	32
BLOCK D	**STONE SYSTEMS**		
	Task 12	Builds stone walls.	34
	Task 13	Installs stone cladding.	36
BLOCK E	**CHIMNEYS AND FIREPLACES**		
	Task 14	Builds chimneys.	39
	Task 15	Builds fireplaces.	42
BLOCK F	**REFRACTORIES AND CORROSION RESISTANT MATERIALS**		
	Task 16	Installs and maintains refractories.	46
	Task 17	Installs and maintains corrosion resistant materials.	49
BLOCK G	**RESTORATION**		
	Task 18	Rebuilds masonry work.	53
	Task 19	Repairs existing masonry work.	55
	Task 20	Cleans and seals masonry surfaces.	58
BLOCK H	**ADDITIONAL MASONRY**		
	Task 21	Installs glass blocks.	60
	Task 22	Installs ornamental and sculpted masonry.	62
	Task 23	Builds arches.	63

APPENDICES

APPENDIX A	TOOLS AND EQUIPMENT	69
APPENDIX B	GLOSSARY	72
APPENDIX C	ACRONYMS	76
APPENDIX D	BLOCK AND TASK WEIGHTING	77
APPENDIX E	PIE CHART	82
APPENDIX F	TASK PROFILE CHART	83

LIST OF PUBLISHED NATIONAL OCCUPATIONAL ANALYSES (Red Seal Trades)

TITLE	NOC* Code
Agricultural Equipment Technician (2007)	7312
Appliance Service Technician (2011)	7332
Automotive Painter (2009)	7322
Automotive Service Technician (2011)	7321
Baker (2006)	6252
Boilermaker (2008)	7262
Bricklayer (2011)	7281
Cabinetmaker (2007)	7272
Carpenter (2010)	7271
Concrete Finisher (2006)	7282
Construction Craft Worker (2009)	7611
Construction Electrician (2011)	7241
Cook (2008)	6242
Electrical Rewind Mechanic (1999)	7333
Floorcovering Installer (2005)	7295
Glazier (2008)	7292
Hairstylist (2009)	6271
Heavy Duty Equipment Technician (2009)	7312
Industrial Electrician (2011)	7242
Industrial Mechanic (Millwright) (2009)	7311
Instrumentation and Control Technician (2010)	2243
Insulator (Heat and Frost) (2007)	7293
Ironworker (Generalist) (2010)	7264
Ironworker (Reinforcing) (2010)	7264
Ironworker (Structural/Ornamental) (2010)	7264
Landscape Horticulturist (2010)	2225
Lather (Interior Systems Mechanic) (2007)	7284
Machinist (2010)	7231

*National Occupational Classification

TITLE	NOC* Code
Metal Fabricator (Fitter) (2008)	7263
Mobile Crane Operator (2009)	7371
Motorcycle Mechanic (2006)	7334
Motor Vehicle Body Repairer (Metal and Paint) (2010)	7322
Oil Burner Mechanic (2006)	7331
Painter and Decorator (2007)	7294
Partsperson (2010)	1472
Plumber (2010)	7251
Powerline Technician (2009)	7244
Recreation Vehicle Service Technician (2006)	7383
Refrigeration and Air Conditioning Mechanic (2009)	7313
Rig Technician (2008)	8232
Roofer (2006)	7291
Sheet Metal Worker (2010)	7261
Sprinkler System Installer (2009)	7252
Steamfitter — Pipefitter (2010)	7252
Tilesetter (2010)	7283
Tool and Die Maker (2010)	7232
Transport Trailer Technician (2008)	7321
Truck and Transport Mechanic (2010)	7321
Welder (2009)	7265

Requests for printed copies of NOAs may be forwarded to:

Trades and Apprenticeship Division
Workplace Partnership Directorate
Human Resources and Skills Development Canada
140 Promenade du Portage, Phase IV, 5th Floor
Gatineau, Quebec K1A 0J9

These publications can be ordered or downloaded online at: www.red-seal.ca. Links to Essential Skills Profiles for some of these trades are also available on this website.

STRUCTURE OF ANALYSIS

To facilitate understanding of the occupation, the work performed by tradespersons is divided into the following categories:

Blocks	largest division within the analysis that is comprised of a distinct set of trade activities
Tasks	distinct actions that describe the activities within a block
Sub-Tasks	distinct actions that describe the activities within a task
Key Competencies	activities that a person should be able to do in order to be called 'competent' in the trade

The analysis also provides the following information:

Trends	changes identified that impact or will impact the trade including work practices, technological advances, and new materials and equipment
Related Components	list of products, items, materials and other elements relevant to the block
Tools and Equipment	categories of tools and equipment used to perform all tasks in the block; these tools and equipment are listed in Appendix A
Context	information to clarify the intent and meaning of tasks
Required Knowledge	elements of knowledge that an individual must acquire to adequately perform a task

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	non-exhaustive list of tools and equipment used in this trade
Appendix B — Glossary	definitions or explanations of selected technical terms used in the analysis
Appendix C — Acronyms	list of acronyms used in the analysis with their full name
Appendix D — Block and Task Weighting	block and task percentages submitted by each jurisdiction, and the national averages of these percentages; these national averages determine the number of questions for each block and task in the Interprovincial exam
Appendix E — Pie Chart	graph which depicts the national percentages of exam questions assigned to blocks
Appendix F — Task Profile Chart	chart which outlines graphically the blocks, tasks and sub-tasks of this analysis

DEVELOPMENT AND VALIDATION OF ANALYSIS

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from HRSDC. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The NOA development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

BLOCKS	Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a block.
SUB-TASKS	Each jurisdiction indicates, with a YES or a NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis Not Validated by a province/territory
ND	trade Not Designated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGE %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) Regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE BRICKLAYER TRADE

"Bricklayer" is this trade's official Red Seal occupational title approved by the CCDA. This analysis covers tasks performed by bricklayers whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Brick and Stone Mason						✓							
Bricklayer	✓	✓	✓	✓			✓	✓	✓			✓	
Bricklayer - Mason					✓								
Mason										✓			

Bricklayers build and repair walls, floors, arches, pavings, partitions, fireplaces, chimneys, smokestacks and other structures. They work with materials such as brick, natural stone, manufactured stone, tiles, precast masonry panels, glass blocks, concrete blocks, light-weight insulated panels, other masonry units, insulation and membranes. They erect, install, maintain, repair and alter various masonry. The structures vary in complexity from a simple masonry walkway to an ornate exterior on a multi-level building.

Bricklayers use wheelbarrows and forklifts to transport materials. They use hand and power tools to cut and trim masonry units to required size. Trowels are used to spread mortar to bond layers of masonry units together. Measuring and layout tools like a plumb line and level are used to ensure proper alignment.

Bricklayers work on industrial, commercial, institutional and residential buildings. They may specialize in stone work, restoration work or ornamental work. They may also specialize in installing refractories in high-temperature environments or installing corrosion resistant materials to line corrosive environments such as tanks and vessels.

Key attributes for people in this trade are manual dexterity, mechanical aptitude, the ability to problem solve and think sequentially, and the ability to work at heights. Bricklaying is physically demanding work and requires considerable effort in lifting heavy materials, climbing, bending, kneeling and working on scaffolding.

Most of the work is performed outdoors, exposing bricklayers to the elements. The winterization of job sites allows the work to continue year round. Construction safety and accident prevention is a priority.

This analysis recognizes similarities or overlaps with the work of other trades such as tilesetters, concrete finishers and carpenters.

Experienced bricklayers may advance to supervisory positions for masonry contractors or in other related fields such as construction management, estimating or building inspection. They may also become contractors.

OCCUPATIONAL OBSERVATIONS

The trend away from fully masonry-veneered single-family homes continues. However, a new trend towards masonry in condominiums is increasing. Builders are starting to value the selling strength of brick and block construction. The advantages include energy efficiency, reduced maintenance, fire resistance, structural soundness and longevity of masonry.

Work practices and equipment are being designed with the bricklayer in mind, with consideration given to ergonomics and efficiency.

Specifications and documentation, owing to Leadership in Energy Efficient Design (LEED), have become more complex. Energy efficiency and environmental awareness affect this trade as new regulations are imposed on building processes and materials. The masonry industry is becoming more compliant with LEED requirements. Bricklayers must keep up-to-date with these new guidelines and requirements.

ESSENTIAL SKILLS SUMMARY

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

The tools are available online or for order at: www.hrsdc.gc.ca/essentialskills.

The essential skills profile for the bricklayer trade indicates that the most important essential skills are **document use**, **numeracy**, **problem solving** and **job task planning** and **organizing**. Bricklayers at the NOA workshop also identified **oral communication** as an important essential skill.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. The following are summaries of the requirements in each of the essential skills, taken from the essential skills profile. A link to the complete essential skills profile can be found at www.red-seal.ca.

Reading
Bricklayers require strong reading skills to read a variety of documentation such as job specifications, manufacturers' directions for product preparation and application, job site, company and jurisdictional safety requirements, and correspondence from suppliers and contractors.

Document Use
Bricklayers interpret blueprints, read assembly drawings and make sketches of items to be built. They complete forms such as time sheets and incident reports.

Writing
Bricklayers use writing skills to complete documents such as lists of materials, incident reports, and time sheets. They may correspond in writing with co-workers regarding supplies or work to be done.

Oral Communication
Bricklayers talk with suppliers, delivery personnel and co-workers, and co-ordinate activities with other trades. They give directions to apprentices, liaise with supervisors and participate in meetings.

Numeracy
Bricklayers measure the length, height and width of structures to be built and calculate angles of arches when constructing openings. They estimate mix ratios and may weigh epoxies and materials. Bricklayers estimate the amount of time and material required to complete a job.

Thinking Skills
Bricklayers use problem solving skills to address issues that may arise on the job such as design changes or omissions. Bricklayers plan the materials and equipment they need for a job and schedule tasks to meet the needs of other trades on site.

Working with Others
Bricklayers usually work in a team environment although they may work alone on some jobs. Many jobs are done with partners. Bricklayers may perform supervisory functions and guide or monitor the work performance of others.

Computer Use
Bricklayers are rarely required to use computers in their daily work activities. However, bricklayers in supervisory positions may be required to use computers for activities such as estimating and for accessing and sharing documents via email.

Continuous Learning
Bricklayers learn continuously through experience and creativity on the job. They may attend sessions provided by manufacturers of new products. Bricklayers may also attend specialty courses, for example safety or landscaping with bricks, blocks and stone, or reference pamphlets, booklets or manuals on specific topics.

BLOCK A COMMON OCCUPATIONAL SKILLS

Trends

Safety is becoming increasingly important and there are more strict regulations intended to protect workers. Related safety documentation has become more important. Equipment used by bricklayers has improved efficiency and safety.

There is an increased use of mast climber scaffolding systems and scissor lifts resulting in reduction in labour needs and an increase in production due to working at optimum working heights. The physical strain on bricklayers has also been reduced.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 1 Performs safety-related functions.

Context

Bricklayers integrate safety practices throughout every task included in the scope of their trade. They maintain a safe work environment through an awareness of work surroundings and the proper maintenance and use of their tools, equipment and materials.

Required Knowledge

K 1	WHMIS
K 2	safety and environmental regulations
K 3	locations of WHMIS documents such as labels and Material Safety Data Sheet (MSDS)
K 4	hazards inherent in bricklaying and masonry materials such as sand, cement and chemicals
K 5	workers' rights and responsibilities
K 6	company safety policies and procedures
K 7	training requirements such as fall arrest, first aid and confined space
K 8	types and operation of fire extinguisher equipment
K 9	emergency procedures, phone numbers and location of first aid stations and medical facilities

K 10	disposal and recycling procedures
K 11	types of personal protective equipment (PPE) such as safety glasses, noise protection, respirators and hard hats
K 12	training requirements for certain PPE and safety equipment
K 13	location of PPE and safety equipment
K 14	jurisdictional OH&S regulations
K 15	types of safety equipment such as first aid kits and eyewash stations

---

Sub-task

A-1.01 **Maintains safe work environment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-1.01.01	handle, store and dispose of hazardous materials according to jurisdictional regulations and WHMIS
A-1.01.02	set up barricading devices and signage such as caution tape, fences and barriers to define work perimeters and contain contaminants or other hazards
A-1.01.03	maintain clean work area
A-1.01.04	perform safety inspections to recognize and report potential hazards
A-1.01.05	acknowledge and inform surrounding co-workers concerning safety and well-being
A-1.01.06	identify and respect physical limitations of self and others
A-1.01.07	identify location of safety zone containing components such as first aid kit, fire extinguishers, MSDS and eye wash stations
A-1.01.08	document items such as inspections, potential hazards, safety meetings, injuries and training according to jurisdictional regulations

Sub-task

A-1.02 **Uses personal protective equipment (PPE) and safety equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-1.02.01	identify site hazards and regulations requiring the use of PPE and safety equipment
A-1.02.02	select PPE and safety equipment appropriate for individual tasks and situations
A-1.02.03	maintain and store PPE and safety equipment according to OH&S and manufacturers' specifications
A-1.02.04	apply local, provincial and national safety regulations such as OH&S
A-1.02.05	identify PPE damage such as excessively worn boots, worn harnesses and cracked safety glasses
A-1.02.06	recognize PPE approved by the Canadian Standards Association (CSA) and applicable safety equipment
A-1.02.07	ensure proper fit of PPE such as respirators, fall arrest harnesses and face shields
A-1.02.08	report and replace damaged or faulty equipment

Task 2 Uses and maintains tools and equipment.

Context Bricklayers must maintain all their tools to ensure that they work properly and safely. Rigging, hoisting and lifting equipment is used to move heavy material on the worksite.

Required Knowledge

K 1	types of hand tools such as trowels, hammers, levels and jointers
K 2	hand tool operating procedures and limitations
K 3	types of power tools such as electric and gas powered
K 4	power tool operating procedures and limitations
K 5	hazards of power tools
K 6	sizes of powder-actuated tools
K 7	powder-actuated tool operating procedures

K 8	jurisdictional and company training and certification requirements for powder-actuated tools
K 9	types of pneumatic tools such as grinders, air guns and jackhammers
K 10	types of hydraulic tools such as brick splitters and saws
K 11	hazards of pneumatic and hydraulic tools
K 12	types of measuring equipment such as bricklayer tapes, laser levels and storey poles
K 13	layout tools such as transit, laser level, gauge rod/storey pole and mason's line
K 14	measuring and layout equipment operating procedures
K 15	types of hoisting and lifting equipment such as forklifts, cranes, block and tackles, chain hoists and electric winches
K 16	types of material handling equipment such as wheelbarrows, pallet jacks, slings and chokers
K 17	applications of hoisting and lifting equipment
K 18	government regulations regarding licensing and training requirements of rigging, hoisting, lifting and material handling equipment
K 19	limitations of hoisting, lifting and material handling equipment

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Sub-task

A-2.01 Maintains tools and equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-2.01.01	repair or replace defective or damaged tools and equipment according to manufacturers' specifications
A-2.01.02	clean and store tools and equipment according to manufacturers' specifications
A-2.01.03	document tool and equipment maintenance
A-2.01.04	recognize worn, damaged and defective tools, and tag and remove from service if necessary
A-2.01.05	lubricate hoisting equipment such as chain hoists and gin wheels

Sub-task

A-2.02 **Uses rigging, hoisting and lifting equipment.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-2.02.01	select rigging equipment such as shackles, spreader bars and chain hoists according to task, and load size and capacities
A-2.02.02	locate centre of gravity of load
A-2.02.03	secure load to rigging using techniques such as choking, and using shackles and lifting clamps
A-2.02.04	communicate with personnel involved in lift using methods such as hand signals and two-way radios
A-2.02.05	recognize safe lifting locations or points
A-2.02.06	estimate weight of material
A-2.02.07	operate forklift according to training requirements
A-2.02.08	stabilize load during lift using tag lines

Task 3 Uses scaffolding.

Context This task is a crucial part of a bricklayer's job since the majority of bricklaying is performed on scaffolding. Maintenance of scaffolding is important to ensure the safety of bricklayers and other tradespeople on the jobsite.

Required Knowledge

K 1	types of scaffolding such as frame, tubular, hydraulic, swing stage and jack-up
K 2	scaffolding components such as pins, braces, ply decks, planks, outriggers and cross braces
K 3	applications of various types of scaffolding
K 4	OH&S considerations as they apply to scaffolding and scaffolding systems
K 5	load limitations
K 6	possible defects such as rusting, damage and split planks
K 7	sequence of assembly
K 8	sequence of dismantling

Sub-task

A-3.01 **Erects scaffolding.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-3.01.01	select scaffolding for the job taking into consideration size, site conditions and task being performed
A-3.01.02	inspect scaffolding for damage and missing components, and tag and remove from service
A-3.01.03	identify hazards such as excess loads when erecting access equipment
A-3.01.04	use scaffolding within operating limitations as indicated on manufacturers' tags and in compliance with OH&S regulations
A-3.01.05	lay out scaffolding ensuring substrate is level and compacted
A-3.01.06	install scaffolding mud sills and scaffold jacks according to regulations
A-3.01.07	secure and level scaffolding according to jurisdictional regulations
A-3.01.08	install means of access
A-3.01.09	install kickboard, debris net, guardrails and mid-rails according to OH&S

Sub-task

A-3.02 **Dismantles scaffolding.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-3.02.01	lower components to lower levels or to ground
A-3.02.02	remove tie-ins as scaffolding is lowered
A-3.02.03	remove components with mechanical equipment such as forklifts and roof winches

Sub-task

A-3.03 Maintains scaffolding.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-3.03.01	inspect scaffolding for damage and missing components, and tag and remove from service
A-3.03.02	replace damaged or missing scaffolding components
A-3.03.03	clean and store scaffolding

Task 4 Organizes work.

Context This task describes support activities that bricklayers perform in order to organize their daily work.

Required Knowledge

K 1	types of documentation such as specifications and sketches
K 2	safety documentation such as MSDS, WHMIS symbols, and OH&S acts
K 3	documentation specific to work sites such as refineries and paper mills
K 4	types of materials such as membranes, primers, fuels and masonry materials
K 5	loading limitations of storage location
K 6	tarp systems such as insulated tarps, sails and shrink wraps
K 7	types of heaters such as salamanders, furnaces and construction heaters
K 8	types of heater power sources such as propane, diesel, electric, natural gas and kerosene
K 9	company safety procedures
K 10	methods for protecting surrounding areas such as setting up barriers and covering with tarp
K 11	environmental protection regulations and guidelines

Sub-task

A-4.01 Uses drawings, blueprints and specifications.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-4.01.01	interpret drawings such as blueprints and sketches
A-4.01.02	interpret manufacturers' specifications
A-4.01.03	interpret jurisdictional and national codes
A-4.01.04	draw a sketch to communicate work coordinates and details

---

Sub-task

A-4.02 Plans daily tasks and activities.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-4.02.01	determine schedule and deadlines by consulting with co-workers and other trades
A-4.02.02	estimate amount of time required for tasks

Sub-task

A-4.03 Prepares job site and materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-4.03.01	estimate and confirm amount of material required
A-4.03.02	coordinate delivery of materials
A-4.03.03	perform site assessment to identify hazards
A-4.03.04	set up mixing area in location accessible to power and water supply

A-4.03.05	place materials on job site for convenience and to avoid interference with other trades
A-4.03.06	store and protect materials such as sand, cement, sealants and masonry
A-4.03.07	weatherize installation location by installing tarp system and temporary roof and setting up heaters and fuel tanks
A-4.03.08	ensure adequate ventilation for heaters
A-4.03.09	store hazardous materials such as fuels and primers

---

Sub-task

A-4.04 Protects surrounding areas.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

A-4.04.01	determine surrounding areas requiring protection such as finished work, personal property and vegetation
A-4.04.02	assess risks to surrounding areas such as airborne debris, excess mortar and fumes
A-4.04.03	restrict dust creation using techniques such as wet sawing, vacuuming and mixing in a separate area
A-4.04.04	set up protective materials such as tarps, plywood sheeting and construction fence

Trends	There are new types of insulation and membranes such as spray-on insulation and membranes.
Related Components	All components apply.
Tools and Equipment	See Appendix A.

Task 5 Performs substrate preparation.

Context

Substrate needs to be prepared to receive and support masonry.

Membranes, flashing and insulation are installed to maintain a complete building envelope.

Required Knowledge

K 1	types of anchors to secure wire mesh
K 2	application techniques
K 3	fasteners
K 4	adhesives
K 5	substrate condition
K 6	anchoring/tie systems such as screwed-in-place and embedded
K 7	types of anchors such as drop-in, pin bolts, wedge, screws and self-tapping
K 8	types of ties such as wire, adjustable and corrugated metal
K 9	sequence of levelling, plumbing and aligning
K 10	tools and equipment required
K 11	types of flashings such as polyvinyl chloride (PVC), rigid, self-adhesive and rubber
K 12	location of flashings
K 13	counter flashing and step flashing
K 14	building envelope systems
K 15	types of membranes such as torch-on, self-adhesive and trowelled
K 16	effect of ultraviolet rays and moisture on membranes

K 17	types of insulation such as ceramic fibre, vermiculite, extruded, fibreglass, spray-on, rock wool and mineral-refractory grade
K 18	jurisdictional and national codes
K 19	spray-on insulation

Sub-task

B-5.01 **Prepares vertical substrates and foundations.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-5.01.01	remove glues, old membranes and accessories to ensure smooth substrate
B-5.01.02	replace deteriorated material such as broken block or brick and nails
B-5.01.03	wash and dry substrate to improve product adhesion
B-5.01.04	fill holes and cracks in substrate using mortar and other filler materials matching existing substrate
B-5.01.05	prime substrate according to manufacturers' specifications

---

Sub-task

B-5.02 **Applies parging.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-5.02.01	dampen substrate to improve bonding
B-5.02.02	fasten mesh to substrate using mechanical fasteners recommended by specifications
B-5.02.03	mix parging material according to application and manufacturers' instructions
B-5.02.04	apply bonding agents to substrate
B-5.02.05	use straightedges to screed parging to maintain uniform thickness

Sub-task

B-5.03 **Installs anchoring/tie systems.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-5.03.01	determine type of system to be used according to engineering specifications
B-5.03.02	select and use tools and equipment such as hammer drills, powder-actuated fastening tools and hand tools
B-5.03.03	determine location of anchors and ties according to coursing and layout
B-5.03.04	install lateral reinforcements such as rebar and dowels to secure wall to base
B-5.03.05	apply epoxy and acrylic to secure anchors
B-5.03.06	drill and screw in anchors to solid substrate

Sub-task

B-5.04 **Installs membrane and flashing.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-5.04.01	clean and prepare bearing surfaces
B-5.04.02	cut and fasten metal flashing at the base of the wall to fit
B-5.04.03	apply primers to prepare wall before installing membranes
B-5.04.04	seal seams and tears to membrane, and cuts and joints in flashing to avoid compromising the building envelope
B-5.04.05	overlap below grade membranes to complete the building envelope

Sub-task

B-5.05 **Installs insulation.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-5.05.01	cut and fit insulation to fully insulate the wall according to specifications
B-5.05.02	seal joints according to architectural specifications
B-5.05.03	secure insulation to substrate and membrane ensuring as tight a fit as possible

Task 6 Constructs masonry.

Context This task describes typical methods used in masonry construction.

Required Knowledge

K 1	types of joints such as concave, raked and flush
K 2	when to finish joints
K 3	environmental hazards
K 4	types of cleaners such as acids, alkali-based, water and detergent
K 5	sequence of cleaning procedures
K 6	mixing ratio for cleaning materials
K 7	applications of waterproofing and dampproofing
K 8	types of waterproofing and dampproofing materials such as silicone-based, solvent-based and alkaline-based
K 9	measuring and layout equipment and practices
K 10	sequence of layout procedures
K 11	blueprints and specifications
K 12	wall systems
K 13	bonds and patterns

Sub-task

B-6.01 **Lays out wall and coursing.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-6.01.01	determine wall location and floor grade
B-6.01.02	perform layout using techniques such as snapping chalk lines, laying out units dry and measuring with a tape
B-6.01.03	mark off location of units to guide placement
B-6.01.04	adjust bond to suit openings such as windows, doors and accessories
B-6.01.05	lay first course plumb and level and compensate for uneven surfaces
B-6.01.06	determine location of weep holes according to engineered specifications

Sub-task

B-6.02 **Finishes joints.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-6.02.01	select type of joint finishes such as concave, convex, flush and extruded
B-6.02.02	assess by touch mortar readiness for finishing (thumbprint method)
B-6.02.03	tool joints in order to achieve uniformity and straightness, and to avoid damage to masonry units
B-6.02.04	fill voids in joints
B-6.02.05	remove excess mortar and retool joint to achieve finished look

Sub-task

B-6.03 **Cleans new masonry surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-6.03.01	match cleaning material to masonry surface to be cleaned according to manufacturers' specifications
B-6.03.02	prepare cleaning material by mixing to required proportions
B-6.03.03	pre-soak, brush and scrub surfaces
B-6.03.04	clean using high pressure washer
B-6.03.05	rub down wall using like material to remove excess mortar
B-6.03.06	rinse surface
B-6.03.07	check surface to ensure uniform cleanliness

Sub-task

B-6.04 **Seals masonry surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-6.04.01	select waterproofing/dampproofing materials according to locations such as above grade and below grade
B-6.04.02	verify that the surface is clean in order to ensure sealant adhesion and prevent trapping visible stains
B-6.04.03	apply materials using methods such as spraying, brushing and rolling

Task 7 — Uses mortars, grouts and adhesives.

Context Mortars, grouts and adhesives hold and structurally support masonry units and accessories. Concrete and grouts are materials containing cementitious materials, aggregate and water, and are used to secure reinforcing within block walls. Mortars, grouts and adhesives are used in every aspect of masonry. Bricklayers must be able to safely handle, prepare and apply these products.

Required Knowledge

K 1	types of mortars such as M, S, N, O and K, and their properties
K 2	admixtures such as accelerators, retardants, dyes and waterproofing components
K 3	codes and regulations
K 4	mixing equipment and procedures
K 5	testing such as strength tests, slump tests and bond tests
K 6	types of concrete or grout and their properties
K 7	reinforcing materials such as fibre and rebar
K 8	concrete or grout consistency required to fill masonry cavities
K 9	grouting methods and procedures
K 10	types and uses of adhesives such as polymers, epoxies, resins, caulking and latex
K 11	shelf and pot life of adhesives
K 12	reinforcement requirements when pouring concrete and grout

---

Sub-task

B-7.01 Mixes mortar, concrete and grout.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-7.01.01	verify that water supply is clean and potable to avoid contamination of mixture
B-7.01.02	adjust mixing conditions (such as heating sand and water) according to code requirements

B-7.01.03	measure components according to ratio and proportions required by specifications
B-7.01.04	add types of admixture required to achieve required properties
B-7.01.05	add types of aggregate such as sand, gravel and pea gravel
B-7.01.06	use mixing equipment such as barrel mixer, shovel and paddle mixer
B-7.01.07	time mixing according to specifications
B-7.01.08	assess readiness of product by observing air entrainment, consistency and moisture content

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Sub-task

B-7.02 Uses mortars.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-7.02.01	apply mortar using methods such as buttering and spreading
B-7.02.02	assess mortar condition and usability, and adjust consistency for particular use

---

Sub-task

B-7.03 Uses concrete and grout.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-7.03.01	assess wall prior to filling
B-7.03.02	install using processes such as high-lift and low-lift grouting
B-7.03.03	install grout using equipment such as buckets, hoppers and pumps
B-7.03.04	consolidate grout to fill voids

Sub-task

B-7.04 Uses adhesives.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

B-7.04.01	prepare surface to receive adhesives
B-7.04.02	apply adhesives using methods such as trowelled, brushed on, injected and caulked

Trends

Load-bearing walls are becoming more common in construction in Canada. This requires that bricklayers be more involved in the early stages of construction.

There is an increasing trend in using surface bonded units on the outside of commercial and residential buildings. There is a greater variety of manufactured stone that is being used as an alternative to natural stone and brick.

Related Components (including, but not limited to)

Masonry units, air and vapour barrier, insulation, flashing, vertical/horizontal reinforcing, base plates, expansion and contraction joints, soft joints, grout, fastening and anchoring systems, ties (anchors), adjustable veneer ties, mortars, nails, adhesives, bonding agents, epoxy, stone bond, rigid insulation, steel wire cables, stickclips, caulking, parging, compressive backer rod, insulation tape, air ventilation accessories, draining systems, lateral support system, lintel supports, lintel reinforcement, sills and soffits, water repellents, waterproofing, cleaning agents, shelf angles, fire stops, wedges, batter boards.

Tools and Equipment

See Appendix A.

Task 8 Builds masonry walls.

Context

Non-load-bearing masonry walls include veneer walls, interior partitions and exterior curtain walls. This task describes the proper method of installing these walls using brick and block, and accessories. Stone walls are described in Block D. Load-bearing walls, columns and pilasters are designed to carry loads in addition to their own load. Load-bearing walls include structural and cavity walls which are above grade, and foundation walls which are below grade. They also include retaining walls which resist lateral forces. Reinforcing systems in load-bearing walls are always included and are critical as they carry or resist stresses and forces.

Required Knowledge

K 1 applicable sections of National Building Code (NBC)

K 2 types of masonry units such as clay brick, concrete brick, sand-lime brick and concrete block

K 3	sizes and shapes of masonry units such as bricks and blocks
K 4	types of non-load-bearing walls such as curtain walls, garden walls and partition walls
K 5	types of load-bearing walls such as retaining walls, cavity walls and windload walls
K 6	columns, pilasters and buttresses
K 7	bonds and patterns
K 8	types and consistencies of mortars
K 9	construction joints such as expansion joints and control joints
K 10	masonry wall drainage and ventilation systems such as weep and vent holes
K 11	horizontal and vertical coursing
K 12	ground conditions and grades
K 13	retaining wall systems and designs
K 14	footings and foundations
K 15	building envelope components such as membranes and insulation
K 16	types of reinforcing material such as rebar, wire mesh and reinforcement wire
K 17	reinforced wall systems
K 18	specifications for reinforcing
K 19	accessories such as anchors, plates and bolts
K 20	finished height of column and pilaster
K 21	regional reinforcement requirements such as seismic and hurricane
K 22	use of cleanouts

Sub-task

C-8.01 Builds non-load-bearing walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-8.01.01	select and use tools and equipment
C-8.01.02	determine wall properties such as finished height and length according to blueprints
C-8.01.03	install reinforcements according to specifications for additional wall stability
C-8.01.04	build lead to establish each course and height
C-8.01.05	cut units using hand and power tools to required sizes and shapes

C-8.01.06	maintain bond
C-8.01.07	lay units to the top of the line
C-8.01.08	adjust bond to allow for openings according to code requirements
C-8.01.09	install lintels such as cast-in-place, precast and angle iron to support units over openings
C-8.01.10	build in accessories such as electrical, mechanical and plumbing

---

Sub-task

C-8.02 Builds load-bearing walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-8.02.01	select and use tools and equipment
C-8.02.02	determine wall properties such as finished height and length according to blueprints
C-8.02.03	install reinforcements and structural accessories according to specifications for additional wall stability and load-bearing requirements
C-8.02.04	build lead to establish each course and height
C-8.02.05	cut units using hand and power tools to required sizes and shapes
C-8.02.06	maintain bond
C-8.02.07	lay units to the top of the line
C-8.02.08	adjust bond to allow for openings
C-8.02.09	shore up openings to receive and support lintels
C-8.02.10	install lintels such as cast-in-place, precast and angle iron to support units over openings
C-8.02.11	build in accessories such as electrical, mechanical and plumbing
C-8.02.12	batter and slope retaining walls in order to offset lateral forces
C-8.02.13	brace and support walls at required intervals
C-8.02.14	install drainage systems on retaining walls

Task 9 — Builds horizontal masonry surfaces.

Context Bricklayers build horizontal surfaces such as patios, walkways, stairways and driveways. These surfaces must be built to specifications. Bricklayers may use various types of masonry units such as brick, flagstone and pavers to build these surfaces.

Required Knowledge

K 1	excavations
K 2	soil conditions
K 3	drainage
K 4	membranes
K 5	codes and regulations
K 6	slope and grade
K 7	assemblies in mortared and mortarless applications (rigid and flexible)
K 8	types of masonry units for horizontal surfaces such as brick, pavers and flagstone
K 9	bonds and patterns
K 10	mortars and aggregates
K 11	bonding agents and additives
K 12	sealants
K 13	required tools and equipment

Sub-task

C-9.01 **Prepares horizontal substrate.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	yes	yes	NV	yes	no	yes	yes	yes	ND	NV	ND

Key Competencies

C-9.01.01	compact substrate materials by tamping to required grade, elevation and compaction
C-9.01.02	install edge restraints
C-9.01.03	select required mixture of concrete for application
C-9.01.04	form and pour concrete to required thickness
C-9.01.05	screed surfaces to maintain and produce even surfaces

Sub-task

C-9.02 **Lays masonry units on horizontal surfaces.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	yes	yes	NV	yes	no	yes	yes	yes	ND	NV	ND

Key Competencies

C-9.02.01	cut masonry units to fit required space and create uniform joints
C-9.02.02	align units to be aesthetically pleasing and according to bond used
C-9.02.03	follow lines, slopes, grades and angles
C-9.02.04	compact pavers and apply sand into spacing between pavers
C-9.02.05	finish joints in mortared systems
C-9.02.06	incorporate construction joints to allow movement
C-9.02.07	seal assemblies

Task 10 — Builds and installs prefabricated masonry units. (NOT COMMON CORE)

Context Prefabricated masonry is usually fabricated off-site and delivered to be assembled and/or mechanically fastened. They are made of masonry units, reinforcing steel, grout and mortar. Bricklayers are involved in both the fabrication and installation of these components. They may be used for greater efficiency of installation or for situations where masonry cannot easily be built on site.

Required Knowledge

K 1	form release agents
K 2	storage, stacking and transport
K 3	colour matching and inspection for installation
K 4	effects of temperature and humidity on the prefabrication curing process
K 5	fastening systems
K 6	grouting and caulking procedures
K 7	rigging and hoisting

Sub-task

C-10.01 **Builds prefabricated masonry. (NOT COMMON CORE)**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	no	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-10.01.01	align and level units of prefabricated masonry according to engineered design
C-10.01.02	build panel to gauge according to installation location and specifications
C-10.01.03	prepare forms or jigs to accept materials by applying form release agent and adding materials such as reinforcing, anchoring and bearing plates
C-10.01.04	add masonry materials to forms to complete prefabrication
C-10.01.05	remove forms or jigs

Sub-task

C-10.02 **Erects prefabricated masonry. (NOT COMMON CORE)**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	no	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-10.02.01	verify that substrate has been prepared using required anchoring systems
C-10.02.02	align and set panels and anchors in place for subsequent welding
C-10.02.03	repair damaged masonry on site

Task 11 Installs surface-bonded masonry units.

Context Surface-bonded masonry units are thin masonry components applied to any surface. They are used for aesthetic purposes using a variety of applied components.

Required Knowledge

K 1	mortar and bonding agents
K 2	restrictions and standards (CSA and NBC)

K 3	types of material such as brick, stone and cement products
K 4	layout dimensions
K 5	types of bonds and patterns

Sub-task

C-11.01 Prepares substrate for surface-bonded masonry units.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-11.01.01	install weatherproofing components such as a rain screen according to jurisdictional regulations
C-11.01.02	install wire mesh using specified mechanical fasteners over entire substrate area to support bonding agent and masonry unit
C-11.01.03	apply scratch coat into wire mesh to ensure full coverage
C-11.01.04	scratch the surface to improve bond to the masonry unit

---

Sub-task

C-11.02 Applies surface-bonded masonry units.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

C-11.02.01	dampen the substrate to improve bonding
C-11.02.02	butter back of surface-bonded masonry units
C-11.02.03	apply and finish joints for surface-bonded masonry units

BLOCK D — STONE SYSTEMS

Trends

There is an increase in the use and variety of quarried and pre-dimensioned stone. There are more advanced anchoring systems to improve strength and longevity.

Related Components (including, but not limited to)

Masonry units, air barriers, insulation, flashing, vertical/horizontal reinforcing, expansion and control joints, soft joints, grout, fastening and anchoring systems, mortars, adhesives, bonding agents, epoxies and resins, rigid insulation, stickclips, caulking, parging, compressive backer rod, weep holes, vents, air ventilation accessories, draining systems, lateral support system, lintel supports, lintel reinforcement, sills and soffits, water repellents, waterproofing products, cleaning agents, shelf angles, fire stops, wedges, batter boards.

Tools and Equipment

See Appendix A.

Task 12 — Builds stone walls.

Context

Stone walls may be load-bearing or non-load-bearing. Examples include veneers, multi-wythe, garden walls and retaining walls. Stones may be natural, quarried, or produced in a stone-cutting and finishing facility. Size, shape and type of stone vary greatly; therefore, correct selection and preparation are critical to maintain integrity of the wall.

Required Knowledge

K 1	classifications, types and properties of natural stone
K 2	types of mortars
K 3	mortar consistencies according to stone
K 4	types of bonds and patterns
K 5	bedding planes
K 6	anchoring systems
K 7	flashing materials and procedures
K 8	supporting backup wall
K 9	rigging and hoisting
K 10	caulking, epoxies and other bonding agents

K 11	cleaning materials and procedures for natural stone
K 12	types of wall systems such as veneers, multi-wythe, garden walls and retaining walls
K 13	components of building envelope
K 14	installation procedures for building envelope
K 15	damp curing requirements

Sub-task

D-12.01 Prepares stone.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

D-12.01.01	cull stones that are either defective or otherwise undesirable to prevent failures or to enhance aesthetics of the finished assembly
D-12.01.02	remove stains or debris to prevent bonding failures or to enhance aesthetics of the finished assembly
D-12.01.03	resize units using methods such as cutting, grinding, chiselling, and pitching to suit design and to ensure proper fit
D-12.01.04	dress unit surfaces to suit design and for aesthetic purposes
D-12.01.05	drill holes for dowels or kerf to accommodate anchors

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Sub-task

D-12.02 Lays stone.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

D-12.02.01	apply sufficient mortar bed to support stone
D-12.02.02	set stone on mortar bed to required degree of alignment and plumb
D-12.02.03	use temporary supports such as wedges or bracing to maintain joint size and alignment

D-12.02.04	follow established bonding and pattern practices
D-12.02.05	tool joints according to specifications to maintain integrity of assembly or for aesthetic purposes

Sub-task

D-12.03 Damp cures walls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	yes	yes	NV	yes	yes	yes	no	yes	ND	NV	ND

Key Competencies

D-12.03.01	mist completed assembly at required intervals according to specifications to ensure adequate curing
D-12.03.02	apply and secure moist burlap or plastic according to specifications and weather conditions to ensure adequate curing

Task 13 Installs stone cladding.

Context Bricklayers apply stone cladding by mechanically fastening stone to a structural backup wall. Stone used for cladding is typically large and pre-finished in a stone-cutting and finishing facility. Stone cladding is not load-bearing and has an aesthetic and a protective function.

Required Knowledge

K 1	sizes and types of stone cladding such as granite, marble and limestone
K 2	supporting backup wall
K 3	rigging and hoisting
K 4	stone properties such as mass, density and porosity
K 5	anchoring systems
K 6	caulking, epoxies and other bonding agents
K 7	cleaning materials and procedures for natural stone
K 8	type of wall system
K 9	components of building envelope
K 10	installation procedures for building envelope
K 11	flashing materials and installation procedures

Sub-task

D-13.01 Prepares substrate for cladding.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

D-13.01.01	recognize deficiencies in backup to determine necessary repairs or potential incompatibility with design
D-13.01.02	remove debris by brushing, scraping or grinding to create a continuously smooth surface
D-13.01.03	fill voids in concrete backup by trowelling or grouting to create a continuously smooth surface
D-13.01.04	set horizontal and vertical grid lines to ensure positioning of anchors as required in specifications and blueprints

---

Sub-task

D-13.02 Prepares stone for cladding.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

D-13.02.01	inspect stone for presence of stains, defects or debris to prevent failures or to enhance aesthetics of the finished panel
D-13.02.02	resize units by cutting or grinding to suit design
D-13.02.03	reface granite surface using a torch to achieve rough finish
D-13.02.04	drill holes for dowels or kerf to accommodate anchors
D-13.02.05	prefabricate sections by joining units and adhering them with products such as epoxies to satisfy requirements

Sub-task

D-13.03 Installs stones.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

D-13.03.01	set units on anchors manually or using rigging and hoisting equipment for support
D-13.03.02	align and temporarily stabilize units with shims using vertical and horizontal string lines as reference
D-13.03.03	adjust anchoring system to secure units, correct potential incompatibility with design and ensure aesthetically-pleasing final alignment

BLOCK E CHIMNEYS AND FIREPLACES

Trends	The market has seen an emergence of fireplace inserts, wood stoves and direct vent gas fireplaces.
Related Components (including, but not limited to)	Masonry units, air barrier, insulation, flashing, firebrick, anchoring systems, membrane, vertical/horizontal reinforcing, grout, ties (anchors), adhesives, mortars, ceramic insulation, rigid insulation, caulking, compressive backer rod, insulation tape, weep holes, wood forms, air ventilation accessories, draining systems, lateral support system, lintel supports, water repellents, cleaning agents, fire stops, spark arresters, liners, clean-out doors, metal caps, metal flashings, flue liner, cast iron doors, grills, dampers, fireclay, ceramic blanket, angle iron, arch centre, sheet metal, ash pan, ash dump, fresh air kit, facing material, mantel.
Tools and Equipment	See Appendix A.

Task 14 Builds chimneys.

Context Chimneys dissipate the gases from combusted materials. They can be residential and commercial. Chimneys can be decorative and installed in most areas of the building.

Required Knowledge

K 1	foundation materials such as concrete, concrete blocks and bricks
K 2	codes and regulations such as NBC
K 3	fireplace and chimney operation
K 4	flue liners
K 5	materials such as fireclay
K 6	expansion and contraction of installation materials
K 7	types and sizes of flues and fireboxes
K 8	types and sizes of heaters
K 9	types of insulation and flashings
K 10	backup and veneer materials such as brick, stone and tile

K 11	types of bonds
K 12	types of appliances such as heaters and furnaces

Sub-task

E-14.01 Builds foundation supports for chimneys.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	no	yes	yes	yes	ND	NV	ND

Key Competencies

E-14.01.01	select and use tools and equipment
E-14.01.02	calculate dimensions of chimney according to local and jurisdictional bylaws, and ventilation demands of the appliance
E-14.01.03	determine grade and height of appliance
E-14.01.04	install clean-outs, fresh air intakes and ash dump
E-14.01.05	install footings and foundations

Sub-task

E-14.02 Lays masonry units to build chimneys.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-14.02.01	select and use tools and equipment
E-14.02.02	calculate the chimney height for draft according to manufacturers' specifications, local and jurisdictional bylaws and surrounding environment
E-14.02.03	install masonry units to pre-determined dimensions

Sub-task

E-14.03 Installs flue lining.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-14.03.01	select and use tools and equipment such as specified mortar
E-14.03.02	calculate placement for appliance connection such as thimble, smoke chamber and throat according to manufacturers' specifications, and local and jurisdictional bylaws
E-14.03.03	calculate flue liner height to ensure proper draft
E-14.03.04	create hole for thimble to receive appliance

Sub-task

E-14.04 Installs related flashings.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-14.04.01	select and use tools and equipment
E-14.04.02	determine type of flashing method to be used such as reglet or step flashing according to application
E-14.04.03	cut reglet to receive flashing or counter flashing where roof material intersects chimney
E-14.04.04	cut, install and seal flashing

Sub-task

E-14.05 **Installs caps.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-14.05.01	select and use tools and equipment
E-14.05.02	construct cap to direct water away from the chimney
E-14.05.03	form, create drip edge and pour reinforced concrete cap
E-14.05.04	build masonry cap
E-14.05.05	place pre-fabricated caps such as concrete, stone or metal
E-14.05.06	insulate and seal between chimney cap and flue lining with non-combustible materials to protect against expansion and contraction, and water penetration

Task 15 Builds fireplaces.

Context Fireplaces combust material to provide heat and divert smoke and gases to the chimney.

Required Knowledge

K 1	codes and regulations such as NBC
K 2	types of fireplaces
K 3	fireplace and chimney operation
K 4	firebox materials such as firebrick and fireclay, and their assembly
K 5	expansion and contraction of installation materials
K 6	size of openings required for room size
K 7	size of liner based on opening size
K 8	backup and veneer materials such as brick, stone, block and tile
K 9	types of bonds
K 10	foundation supports for hearth
K 11	base construction for hearth
K 12	damper installation and function
K 13	smoke shelf and smoke chamber
K 14	types and sizes of inserts such as electrical, gas and wood

Sub-task

E-15.01 Builds foundation for hearth, firebox, backup material and veneer.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.01.01	select and use tools and equipment
E-15.01.02	select and install materials such as poured, precast and reinforced concrete
E-15.01.03	calculate dimensions such as projection, width and height of hearth
E-15.01.04	install openings required for ash dump and fresh air intake

Sub-task

E-15.02 Builds hearth, firebox and backup.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.02.01	select and use tools and equipment
E-15.02.02	lay out dimensions of firebox to ensure proper proportion
E-15.02.03	lay firebricks for inner hearth
E-15.02.04	install ash dump and air intake
E-15.02.05	cut firebricks and install walls of firebox
E-15.02.06	lay masonry units to build backup and install anchoring system for veneer

Sub-task

E-15.03 **Installs dampers.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.03.01	assemble damper
E-15.03.02	position non-combustible material between damper and top of firebox to allow for expansion and contraction
E-15.03.03	set damper in place

Sub-task

E-15.04 **Builds smoke chambers.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.04.01	select and use tools and equipment
E-15.04.02	create smoke shelf
E-15.04.03	lay out dimensions of smoke chamber
E-15.04.04	corbel brick to create smoke chamber to meet flue liner
E-15.04.05	parge smoke chamber with mortar to allow for a smooth transition

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Sub-task

E-15.05 **Prepares existing fireplace for insert.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.05.01	select and use tools and equipment
E-15.05.02	verify structural integrity of existing fireplace and chimney
E-15.05.03	create rough opening to manufacturers' specifications

Sub-task

E-15.06 Faces fireplaces and inserts.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

E-15.06.01	select and use tools and equipment
E-15.06.02	select materials such as brick, stone and tile according to client specifications
E-15.06.03	corbel and install mantel
E-15.06.04	install lintels
E-15.06.05	install accessories such as fans, vents, doors and intake
E-15.06.06	complete masonry veneer
E-15.06.07	complete facing on outer hearth

BLOCK F REFRACTORIES AND CORROSION RESISTANT MATERIALS

Trends

Refractories and corrosion resistant materials are constantly evolving for cost effectiveness and longevity. Safety procedures continue to improve.

Related Components (including, but not limited to)

Insulation (ceramic modules, ceramic blankets, boards), firebrick, brick (insulation, thermal, ceramic, lead, carbon, magnesia chrome, alkaline resistant, acid-resistant), corrosion resistant tile, carbon and high temperature mortars, bracing, vessels, anchoring systems, lock-out box, membranes, vertical/horizontal reinforcing, embedded plates, grout, ties (anchors), adhesives, welding, resin injections, stickclips, plastics, wood forms, draining systems, lateral support systems, lintel supports, sills and soffits, water repellents, fire stops, cast iron doors, fireclay, angle iron, castables, arch centre, arch templates, sheet metal, lumber, polyethylene (plastic sheets), metal shims.

Tools and Equipment

See Appendix A.

Task 16 Installs and maintains refractories.

Context

Refractories are used in various settings such as refineries, pulp mills, steel mills, crematoriums and incinerators. Refractory materials are used to contain the burning process and retain or refract heat. Refractory materials are also used for ease of installation, cost effectiveness and durability. The skills involved in installing refractories encompass many of the general masonry skills as well as specialized knowledge of these materials and applications.

Required Knowledge

K 1	types of refractory materials such as bricks (alumina/silica, insulating, carbon), accessories and blanket, board insulation, castables and plastics
K 2	types of refractory mortar such as air setting and heat setting
K 3	safety regulations
K 4	types of PPE for refractory material installation
K 5	sequence of installation of brick and tile according to number and application

K 6	types and use of insulations
K 7	forms and arches
K 8	lockout procedures

Sub-task

F-16.01 **Prepares for installation of refractories and accessories.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-16.01.01	select and use tools and equipment such as dead blow hammers, wet saws and hand saws
F-16.01.02	select accessories such as nuts, clips and V-ties
F-16.01.03	establish points and grid lines for anchors such as V-ties, stick pins and threaded studs to maintain integrity of wall
F-16.01.04	cut and shape insulation such as modules, blanket and paper for installation
F-16.01.05	cut and shape refractory units such as insulating, ceramic and arch bricks for installation
F-16.01.06	build and install forms and arch centre for specific application

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Sub-task

F-16.02 **Prepares mortar for refractories.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-16.02.01	select, set up and use tools and equipment
F-16.02.02	select and measure admixtures such as resins and epoxies according to manufacturers' specifications
F-16.02.03	select, measure and mix mortars such as silica, high alumina mortar and fire clays according to manufacturers' specifications

Sub-task

F-16.03 Installs refractories.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-16.03.01	select and use hand tools such as trimming trowels, dead blow hammers and curry combs specific to refractories
F-16.03.02	select and use equipment such as pneumatic, powder-actuated and hydraulic tools specific to refractories
F-16.03.03	pour and vibrate castables to consolidate
F-16.03.04	lay firebrick
F-16.03.05	apply castables such as gunite to protect the substrate
F-16.03.06	install insulation such as blanket and modules
F-16.03.07	ram plastics to consolidate
F-16.03.08	place material separation to accommodate expansion and contraction of materials

Sub-task

F-16.04 Removes existing refractories.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-16.04.01	select and use tools and equipment such as pneumatic hammers, chisels and grinders
F-16.04.02	cut, grind and hammer existing material
F-16.04.03	clean up and dispose of materials according to site requirements

Sub-task

F-16.05 **Repairs refractories.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-16.05.01	select and use tools and equipment such as pneumatic, hydraulic, power and hand tools specific to refractory
F-16.05.02	install refractories according to deficiency identified such as damaged insulation, deteriorated bricks, damaged anchors and cracks
F-16.05.03	cut and shape material to required dimensions

Task 17 Installs and maintains corrosion resistant materials.

Context Corrosion resistant applications are used in sites such as pulp mills, food processing plants and gas plants. The materials are used to protect containment units such as vessels, towers and chests, and the surrounding environment. The skills involved in installing and maintaining corrosion resistant materials encompass many of the general masonry skills as well as specialized knowledge of these materials and applications.

Required Knowledge

K 1	types of corrosion resistant units, mortars, accessories, membranes and concrete
K 2	types of hazards such as ammonia, chlorine and hydrogen sulphate
K 3	safety regulations
K 4	forms and arches
K 5	sequence of installation of brick and tile according to number and application
K 6	types of PPE for corrosion resistant material installation
K 7	lockout procedures

Sub-task

F-17.01 **Prepares for installation of corrosion resistant materials and accessories.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-17.01.01	select and use tools and equipment such as wet saws and trowels specific to application
F-17.01.02	select accessories such as anchors
F-17.01.03	establish points for anchors to maintain integrity of wall
F-17.01.04	cut and shape corrosion resistant materials such as brick, tile and membranes for installation
F-17.01.05	build and install forms and arch centre for specific application
F-17.01.06	select membrane according to application
F-17.01.07	prepare the vessel surface for installation using methods such as sandblasting, chemical etching and coating

---

Sub-task

F-17.02 **Prepares mortar for corrosion resistant materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-17.02.01	select, set up and use tools and equipment
F-17.02.02	select, measure and mix mortar ingredients such as resins and epoxies according to manufacturers' specifications

Sub-task

F-17.03 **Installs corrosion resistant materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-17.03.01	select and use tools and equipment such as gunite machines and vibrators
F-17.03.02	pour and vibrate castables to consolidate
F-17.03.03	lay brick
F-17.03.04	lay tile
F-17.03.05	apply castables such as gunite to protect the substrate
F-17.03.06	form and pour concrete to create base for containment area

Sub-task

F-17.04 **Removes existing corrosion resistant materials.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-17.04.01	select and use tools and equipment such as jackhammers, grinders and chisels
F-17.04.02	cut, grind and hammer existing material
F-17.04.03	clean up and dispose of materials according to site requirements

Sub-task

F-17.05 Repairs corrosion resistant materials.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	no	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

F-17.05.01	select and use tools and equipment such as pneumatic, hydraulic, power and hand tools specific to corrosion resistant materials
F-17.05.02	install corrosion resistant materials according to deficiency identified such as brick, tile, membrane and mortar erosion
F-17.05.03	cut and shape material to required dimensions

BLOCK G — RESTORATION

Trends	Restoration work is increasing as original masonry in Canada has reached the age where repairs are necessary. Large restoration projects have been initiated on historical buildings across Canada.
Related Components (including, but not limited to)	Stone, brick, concrete, mortars, sealants, aggregate sand, lime, cement, epoxy, acrylics, dyes, colouring agents, grout, steel angles, ties (anchors), structural steel, flashing, sheet metal, weepers, vents, insulation, membranes, lumber, fibreglass reinforcing, injection systems.
Tools and Equipment	See Appendix A.

Task 18 — Rebuilds masonry work.

Context This task describes the process of removing and reinstalling selected masonry work ranging from small areas to entire assemblies. It involves using proper equipment, support and bracing, as well as matching the existing structure.

Required Knowledge

K 1	previous and current masonry construction techniques
K 2	masonry load patterns
K 3	types and colours of mortars
K 4	types of anchoring systems
K 5	effect of natural, mechanical or chemical processes on the materials
K 6	site, personnel and public safety measures
K 7	rigging and hoisting
K 8	storage practices for salvaged units
K 9	documentation methods for rebuilding such as tagging and photogrammetry

Sub-task

G-18.01 Disassembles unit masonry.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-18.01.01	determine plan of action based on assessed cause of deterioration and safe approach
G-18.01.02	shore surrounding masonry to prevent collapse or further damage during disassembly and reassembly
G-18.01.03	record placement of units using methods such as photogrammetry and sketches to ensure accuracy of future placement
G-18.01.04	remove mortar and units using tools according to method of disassembly selected
G-18.01.05	clean salvaged masonry units for reassembly using tools and cleaning agents according to specifications
G-18.01.06	store salvaged masonry units in a secure dry area to protect against damage

Sub-task

G-18.02 Prepares restoration work area.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-18.02.01	remove mortar from standing wall and backup wall
G-18.02.02	clean and restore components such as anchors, ties and shelf angles
G-18.02.03	repair backup wall and existing membrane according to noted deficiencies

Sub-task

G-18.03 **Reinstalls masonry and accessories.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-18.03.01	place and secure related components such as flashings, ties, angle irons and electrical boxes
G-18.03.02	match appearance of existing mortar
G-18.03.03	lay new or salvaged masonry units based on recorded placement to match appearance of existing or recently disassembled work

Task 19 Repairs existing masonry work.

Context This task describes non-destructive methods of restoring masonry work, including repointing and repairing of individual units. Repairs may be done in place or after removal and may range from historic fabric to relatively new construction.

Required Knowledge

K 1	mechanical repair techniques such as stitching, pinning or dowelling, using spiral ties and dispersed hydrated lime (DHL) injections
K 2	non-mechanical repair techniques such as composite repair, Dutchman repair, cutting and refacing
K 3	types of components such as bricks, stones and terracotta
K 4	loss of moisture from mortar due to evaporation and absorption in the masonry
K 5	types and bonding properties of mortar
K 6	preparation techniques of mortar
K 7	admixtures such as colouring, air entrainment agents, waterproofing and bonding agents
K 8	historic and conventional construction methods
K 9	types of materials used for refacing such as epoxies and acrylics
K 10	epoxy anchoring systems

Sub-task

G-19.01 Removes deteriorated components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-19.01.01	determine and follow plan of action based on assessed cause of deterioration and safe approach
G-19.01.02	shore surrounding masonry to prevent collapse or further damage during removal and re-installation
G-19.01.03	record placement of units using methods such as photogrammetry and sketches to ensure accuracy of future placement
G-19.01.04	document shape, size and finished face of non-salvageable units to create templates
G-19.01.05	remove mortar, entire unit or damaged portion of a unit, using tools according to method of removal selected
G-19.01.06	document failures in material such as hairline cracks, spalling and delamination for record keeping
G-19.01.07	clean salvaged masonry units for re-installation according to specifications using tools and cleaning agents
G-19.01.08	store salvaged masonry units in a secure dry area to protect against damage

Sub-task

G-19.02 Repoints joints.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-19.02.01	remove defective mortar from existing joints
G-19.02.02	clean opening left after removal of defective mortar using water or air pressure
G-19.02.03	pre-moisten area to be repointed to ensure correct adhesion of new mortar
G-19.02.04	fill, compress and tool joints following established procedures to ensure integrity of new joints

G-19.02.05	mist joints or cover them with wet burlap to prevent joint failure
G-19.02.06	protect surfaces from environmental conditions such as rain, wind and sun

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Sub-task

G-19.03 Repairs masonry units.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-19.03.01	drill masonry for pinning and stitching
G-19.03.02	mix repair compound according to manufacturers' specifications
G-19.03.03	fill voids, rebuild portions of host material, or mould units to match original features of the units
G-19.03.04	rejoin severed or cracked units using materials such as dowels, threaded pins or epoxy
G-19.03.05	reattach units to backup wall using expandable grout
G-19.03.06	replace deteriorated unit face with newly cut face using mortar or adhesives
G-19.03.07	support refaced units using wedges until initial set

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Sub-task

G-19.04 Reinstalls masonry units and accessories.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-19.04.01	place and secure related components such as flashings, ties, angle irons and electrical boxes
G-19.04.02	match appearance of existing mortar
G-19.04.03	pre-moisten adjacent surfaces to ensure correct adhesion of new mortar
G-19.04.04	lay repaired masonry units based on recorded placement to match appearance of existing or recently disassembled work
G-19.04.05	apply mortar to unit and adjacent surfaces to ensure total joint integrity
G-19.04.06	compress and tool joints to match original
G-19.04.07	mist joints or cover them with wet burlap to prevent joint failure

Task 20 — Cleans and seals masonry surfaces.

Context Bricklayers clean masonry surfaces before and after restoration work has been performed so that the surfaces are returned to their original appearance. Sealants and coatings may be applied to prevent water absorption and staining.

Required Knowledge

K 1	masonry materials that may be affected by the cleaning, sealing or waterproofing/dampproofing processes
K 2	blast materials such as sand, water, nut shells, baking soda and glass
K 3	operating procedures for cleaning equipment
K 4	restoration cleaning agents such as acids and stain removers
K 5	safety practices when cleaning surfaces and handling products or equipment
K 6	sealants such as caulking and polyurethane
K 7	waterproofing/dampproofing materials such as silicone and solvent-based
K 8	application methods to clean and seal such as brushing, rolling, spraying and trowelling
K 9	practices to protect surrounding materials or assemblies during and after cleaning, sealing and waterproofing/dampproofing
K 10	types of soiling and stains
K 11	environmental regulations

Sub-task

G-20.01 Prepares surfaces.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-20.01.01	determine plan of action based on substrate, type of stain and location of work area
G-20.01.02	remove visible build-up of undesirable material such as mortar, stains or droppings according to cleaning products' manufacturers' specifications and environmental regulations

Sub-task

G-20.02 Cleans existing masonry surfaces.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-20.02.01	mix cleaning agents according to manufacturers' specifications
G-20.02.02	pre-soak area to prevent absorption of the cleaning agent
G-20.02.03	apply cleaning agents according to specifications and in compliance with environmental regulations
G-20.02.04	rinse cleaned area with water to eliminate any traces of cleaning agents

Sub-task

G-20.03 Applies sealants and coatings for restoration work.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

G-20.03.01	apply sealants and coatings using tools and equipment such as trowels, brushes, sprayers and rollers according to manufacturers' specifications and architectural requirements
G-20.03.02	install backup materials such as backer rods and fire-resistant materials prior to caulking

BLOCK H — ADDITIONAL MASONRY

Trends

Glass blocks are gaining popularity in commercial and residential buildings for their light transferring abilities and aesthetics along with their ability to maintain privacy and security.

Stone and brick are increasingly being used for decorative accents such as house numbers and accents for brick fronts. There is an increase in the use of accent arches over windows and doors.

Related Components (including, but not limited to)

Masonry units, specialized and regular mortars, caulking compounds, different aggregates, wire reinforcement, concrete, electrical components, mechanical components, spacers, tracks, expansion strips, anchoring systems, membranes, pigments, fasteners, fastening agents, insulation tape, adhesives, adjustable veneer ties, rigid insulation, stickclips, additives, epoxy and resins, bonding agents, lumber, plastic spacers, weepers, cleaning agents, insulation, backer rod, wire mesh, cement board, expansion and control joints, soft joints, air barrier, flashing, air ventilation accessories, draining systems, lateral support system, lintel supports, sills, water repellents, shelf angles, fire stop materials.

Tools and Equipment

See Appendix A.

Task 21 — Installs glass blocks.

Context

Glass blocks are manufactured in various shapes (square, rectangular, corner), sizes, fire ratings and clarities. They have insulating and light transmission properties. They are used for aesthetics, for security and privacy, and for waterproofing areas such as showers.

Required Knowledge

K 1	types, shapes and sizes of glass blocks
K 2	types of mortars and associated additives
K 3	types of reinforcement and anchors
K 4	uses of expansion strips
K 5	installation procedures and methods for glass blocks

Sub-task

H-21.01 Prepares work area.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-21.01.01	determine the size of the opening for laying up glass blocks
H-21.01.02	verify and adjust the base surface to ensure that it is level

Sub-task

H-21.02 Lays glass blocks.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-21.02.01	ensure mortar moisture consistency as glass blocks do not absorb moisture
H-21.02.02	install spacers and expansion strips in a uniform manner to keep the mortar joints consistent
H-21.02.03	lay up glass blocks to pattern and design to create a level and plumb finished product
H-21.02.04	insert joint reinforcing and anchors to ensure structural integrity
H-21.02.05	joint glass blocks to create an aesthetically pleasing product
H-21.02.06	clean glass blocks to remove excess mortar and dust while not scratching or damaging the surface

Task 22 — Installs ornamental and sculpted masonry.

Context Ornamental and sculpted masonry can be made from, or designed with, many types of materials such as brick, manufactured or sculpted stone. They are used as decorative additions to buildings. They are assembled into structures such as columns, sound reduction fences, cornices and hand rails.

Required Knowledge

K 1	materials such as stone, brick, block and marble
K 2	types of bonds and patterns such as running, stack, herringbone and basket weave
K 3	types of mortars
K 4	factors affecting durability such as weather, expansion joints, flashing and capping
K 5	unique anchoring systems associated with ornamental and sculpted units

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Sub-task

H-22.01 Prepares for installation of ornamental and sculpted masonry.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-22.01.01	determine placement of unit or pattern according to drawings
H-22.01.02	verify the size, shape and weight of units
H-22.01.03	prepare the surface area to receive the unit to ensure proper anchoring and a good fit

Sub-task

H-22.02 **Installs ornamental and sculpted masonry units.**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	no	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-22.02.01	match mortar to material for an aesthetically pleasing finished product
H-22.02.02	lay up units according to bonding and patterns in the drawing
H-22.02.03	finish joints to complete installation

Task 23 Builds arches.

Context Arches can be built for ornamental and structural purposes. They are built in varied styles such as gothic, roman, segmental or jack arch. Arches are built to span areas and distribute the loads above them.

Required Knowledge

K 1	materials for arch such as brick, stone and block
K 2	types, styles and sizes of arches
K 3	template materials such as wood, steel and extruded foam
K 4	geometric concepts
K 5	construction techniques for templates
K 6	mortar setting times
K 7	tray and step flashing

Sub-task

H-23.01 Prepares location.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-23.01.01	determine location of arch by referring to drawing
H-23.01.02	lay up wall to abutment height to receive the arch
H-23.01.03	determine and install reinforcing in surrounding masonry
H-23.01.04	build support system for template to accept the weight of the arch

Sub-task

H-23.02 Builds template.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-23.02.01	determine type, location, span, rise and depth of arch template by referring to architectural drawing
H-23.02.02	determine structural strength requirements for template to ensure it will hold the arch while mortar sets
H-23.02.03	assemble the template using various materials such as wood, extruded foam or steel

Sub-task

H-23.03 Places template.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-23.03.01	position template on support system
H-23.03.02	adjust and shim template to achieve required degree of level and plumb
H-23.03.03	shore template to temporarily secure it while arch is being built

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Sub-task

H-23.04 Installs arch masonry units.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-23.04.01	verify centre of arch to determine material lay-up requirements and keystone location
H-23.04.02	shape masonry voussoirs by cutting material to fit arch
H-23.04.03	cut creepers while laying up materials to create a uniform extrados

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Sub-task

H-23.05 Removes template.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	NV	yes	yes	yes	yes	yes	ND	NV	ND

Key Competencies

H-23.05.01	verify the mortar has cured sufficiently and has enough strength to hold once template has been removed
H-23.05.02	remove any shoring materials and shims to release template
H-23.05.03	remove template without damaging arch material
H-23.05.04	point and joint mortar in arch to finish unit

APPENDICES

APPENDIX A TOOLS AND EQUIPMENT

Hand Tools

adjustable wrench
boltcutter
brick tongs
brooms
brushes
caulking gun
caulking tool
C-clamps
chisels (pointed, flat, brick set, pitching, straight, splitting, toothed, plugging)
curry comb
grout bag
hammers (brick, face, mash, refractory, ball peen, axe, bush, claw, dead blow, rubber mallet, scotch, sledge hammer)
hawk
jointer
knives
line blocks
line holders
line pins
line trigs
manual splitter
mortar board
mortar hoe
pick axe
pliers
portable sprayer
pry bar
raker (wheel type)
sandbox
sandscreen
scrapers
screwdrivers
shims/spacers
shovels
slicker (tuck pointer)
socket set/wrench
sponges
staple gun
tarpaulin
templates
trammel points
trimmers
trowels (mason's, margin, pointing, bucket, buttering, duck billed)
venting tool
water bucket
water drum
water hose
wheelbarrow
wire snips
wooden pallets

Measuring and Layout Tools and Equipment

bricklayer's tape
chalk line
gauge rod/storey pole
laser level
line block
mason's level
mason's line
mason's spacing rule
measuring tape
plumb-bob
square
straightedge
transit

Power, Hydraulic and Pneumatic, Powder-actuated, and Welding Tools and Equipment

air socks
tiger torch
chain block
chop saw
circular saw
compressors
couplers
diamond or abrasive disk
dollies/pump jacks
drill
extension cord
generators
grease gun
grinder
grout guns
grout pump
hammer drill
hydraulic splitter
hydraulic winches
jackhammer
jig saw
masonry table saw
mortar box
mortar buggy
mortar mixer
mortar silos
pneumatic chisel
pneumatic gun
pneumatic hammer
pneumatic hoses
portable masonry saw (quick cut saw)
powder-actuated fastening tool
pressure washers
propane and diesel heater
vacuum cleaner
vibrator

Personal Protective Equipment (PPE) and Safety Equipment

apron
eye protection
face shields
fire blankets
fire extinguisher
first aid kit
fresh air respirator
gas detection equipment
gloves
hardhat
hearing protection
heat and cold protection
insulated gloves
knee pads
lock-out tags/locks
respiratory protection
safety boots/footwear
safety harness and fall arrest system
safety vest
skin barrier cream

Hoisting and Lifting Equipment and Scaffolding

block and tackle
boom lifts
bosun's chair
bracing
cranes
elevators
fork extensions
forklift
handcart
hydraulic scaffolding
ladders
lewis pins
planks
powered boom platform
powered platforms
push-around powered platforms
scaffolds and their components
scissor lifts
shackles
shoring

Hoisting and Lifting Equipment and Scaffolding (continued)

slings
spreader beam
stairs
stone clamps
suspended platforms
suspended scaffolds
swing stage
work cages

APPENDIX B GLOSSARY

accelerator	material that speeds hardening of concrete or mortar
air barrier	material used in the building envelope to retard the passage of air
alumina	mineral contained in clay used for brickmaking
angle iron	structural section of steel in the form of a 90 degree angle used, in certain situations, to support brickwork
ash dump	trap door for ashes in the floor of a fireplace leading to a chute
ash pan	opening under a fireplace for the removal of ashes
backup wall	part of a masonry wall behind the exterior facing
batter	recessing or sloping masonry in successive courses; the opposite of a corbel
brick veneer	outside facing of brickwork used to cover a wall built of other material
buttering	placing mortar on a masonry unit with a trowel
cavity wall	wall built of masonry units arranged to provide a continuous air space
cement	burned mixture of clay and limestone pulverized (crushed) for making mortar or concrete
concrete masonry unit	hollow or solid unit made of Portland cement and suitable aggregates referred to by the type of aggregate used in their manufacture; for example, cinder block and lightweight block
control joint	joint or space allowing for dimensional change of parts of a structure due to expansion, shrinkage, temperature variations or other causes
corbel	to build a projection or one of a series of projections, of masonry, brick, or concrete built into a wall or any standing member, each projecting progressively farther from its anchoring point and used to support an overhanging member above
course	continuous horizontal layers of units, bonded with mortar in masonry

curtain wall	non-load-bearing wall built for the enclosure of a building
dowels	straight metal bars used to connect two sections of masonry
Dutchman repair	repair involving carefully fitting a new piece of stone into a pocket cut into the existing stone and finishing the new piece to match the surrounding existing stone
expansion joint	joint in a concrete or masonry structure designed to permit expansion without damage to the structure
extrados	upper or exterior curve of an arch
face	exposed surface of a wall or masonry unit
flashing	shielding material (often sheet metal) put around building openings and building base to prevent water penetration and/or provide water drainage
footing	broadened base of a foundation wall or other superstructure
foundation wall	portion of a load-bearing wall below the level of the adjoining grade, or below first floor beams or joists
grout	glue like component of high water-cement ratio that permits it to be poured into spaces within masonry walls; grout consists of water, Portland cement, lime and aggregate
hearth	portion of a fireplace level with the floor, upon which the fire is built
insulation	material with above-average thermal resistance, that inhibits the flow of heat
joint	narrow space between adjacent stones, bricks or other building blocks usually filled with mortar
kerf	to slot into the edge of stone with a saw blade for the insertion of anchors
keystone	wedge-shaped stone at the crown of an arch
lateral support	any means whereby walls are braced either vertically or horizontally by columns, pilasters, crosswalls, beams, floors and roofs
lime	result of limestone burned in a kiln until the carbon dioxide has been driven off
lintel	beam placed over an opening in a load-bearing wall

load-bearing wall	wall which supports a vertical load in addition to its own weight
masonry	brick, tile and stone or combination thereof, bonded with mortar
masonry cement	mill-mixed cement to which sand and water must be added
mortar	plastic mixture of glue-like materials, fine aggregate and water
parging	process of applying a coat of cement mortar on masonry
pilaster	pillar of brick work, rectangular in form, used as a supplement to a pier, usually projecting one-third of the thickness of the wall
pointing	pushing mortar into a joint after the masonry units are laid
reinforcing	steel bars, wire mesh and reinforcement wire which are embedded in concrete to give extra tensile strength to resist movement in concrete slabs, walls, beams and columns
smoke chamber	space in a fireplace immediately above the throat where the smoke gathers before passing into the flue
stone cladding	masonry units that are mechanically fastened to a structural backup wall; stone used for cladding are typically large and are pre-finished in a stone-cutting and finishing shop
stone veneer	stone used as a decorative facing material which is not meant to be load-bearing and is supported by a foundation or structural steel; they are small units laid up in a bed of mortar
surface bonded masonry units	thin masonry components applied to any surface; they are used for aesthetic purposes
template	any form or pattern, such as centring, over which brickwork may be formed
tie	any unit of material that connects masonry units or other materials
veneer wall	non-load-bearing wall securely anchored to a masonry or non-masonry backup wall
voussoir	wedge-shaped masonry units which form an arch ring
waterproofing	coating used to treat the surface of the substrate, preventing liquid from entering, but allowing water vapour to pass
weep holes	small openings left in the outer walls of masonry construction as an outlet for water to move outside the wall and evaporate

winterization	process of organizing the work site for winter operation, which include heating and hoarding of work area, providing proper storage of materials, warming sand and water and protecting masonry work in progress
wythe	continuous vertical section of masonry one unit in thickness

APPENDIX C ACRONYMS

CSA	Canadian Standards Association
DHL	dispersed hydrated lime
LEED	Leadership in Energy Efficient Design
MSDS	Material Safety Data Sheet
NBC	National Building Code of Canada
OH&S	Occupational Health and Safety
PPE	personal protective equipment
PVC	polyvinyl chloride
WHMIS	Workplace Hazardous Materials Information System

APPENDIX D BLOCK AND TASK WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	15	5	10	NV	5	10	25	10	10	ND	NV	ND	11%

Task 1 Performs safety-related functions.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	25	25	42	NV	20	25	30	25	30	ND	NV	ND	29%

Task 2 Uses and maintains tools and equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	25	40	6	NV	20	25	20	25	20	ND	NV	ND	24%

Task 3 Uses scaffolding.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	10	25	20	25	NV	30	25	30	25	15	ND	NV	ND	23%

Task 4 Organizes work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	10	25	15	27	NV	30	25	20	25	35	ND	NV	ND	24%

BLOCK B GENERAL MASONRY PRACTICES

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	15	20	35	25	NV	15	25	25	15	15	ND	NV	ND	21%

Task 5 Performs substrate preparation.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	25	33	23	NV	20	5	30	20	15	ND	NV	ND	21%

Task 6 Constructs masonry.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	50	33	47	NV	50	80	40	60	55	ND	NV	ND	52%

Task 7 Uses mortars, grouts and adhesives.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	30	25	34	30	NV	30	15	30	20	30	ND	NV	ND	27%

BLOCK C MASONRY SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	23	25	27	NV	35	25	20	20	30	ND	NV	ND	25%

Task 8 Builds masonry walls.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	75	40	38	NV	60	80	60	70	50	ND	NV	ND	58%

Task 9 Builds horizontal masonry surfaces.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	10	0	40	27	NV	30	0	10	10	15	ND	NV	ND	16%

Task 10 Builds and installs prefabricated masonry units. (NOT COMMON CORE)

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	0	0	0	NV	5	5	10	5	15	ND	NV	ND	7%

Task 11 Installs surface-bonded masonry units.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	20	25	20	35	NV	5	15	20	15	20	ND	NV	ND	19%

BLOCK D STONE SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	10	5	7	NV	18	10	10	10	9	ND	NV	ND	10%

Task 12 Builds stone walls.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	60	85	50	53	NV	65	80	40	50	50	ND	NV	ND	59%

Task 13 Installs stone cladding.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	40	15	50	47	NV	35	20	60	50	50	ND	NV	ND	41%

BLOCK E CHIMNEYS AND FIREPLACES

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	20	15	15	12	NV	5	10	5	20	9	ND	NV	ND	12%

Task 14 Builds chimneys.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	30	60	53	NV	50	50	40	40	40	ND	NV	ND	46%

Task 15 Builds fireplaces.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	70	40	47	NV	50	50	60	60	60	ND	NV	ND	54%

BLOCK F REFRACTORIES AND CORROSION RESISTANT MATERIALS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	0	0	2	NV	5	5	5	10	12	ND	NV	ND	5%

Task 16 Installs and maintains refractories.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	0	0	50	NV	70	90	60	80	50	ND	NV	ND	64%

Task 17 Installs and maintains corrosion resistant materials.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	0	0	50	NV	30	10	40	20	50	ND	NV	ND	36%

BLOCK G RESTORATION

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	5	10	10	10	NV	10	10	5	10	7	ND	NV	ND	9%

Task 18 Rebuilds masonry work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	45	33	35	47	NV	60	40	25	35	40	ND	NV	ND	40%

Task 19 Repairs existing masonry work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	45	33	35	40	NV	30	40	50	45	40	ND	NV	ND	40%

Task 20 Cleans and seals masonry surfaces.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	10	34	30	13	NV	10	20	25	20	20	ND	NV	ND	20%

BLOCK H ADDITIONAL MASONRY

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	7	5	7	NV	7	5	5	5	8	ND	NV	ND	7%

Task 21 Installs glass blocks.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	35	45	50	22	NV	10	40	50	25	30	ND	NV	ND	34%

Task 22 Installs ornamental and sculpted masonry.

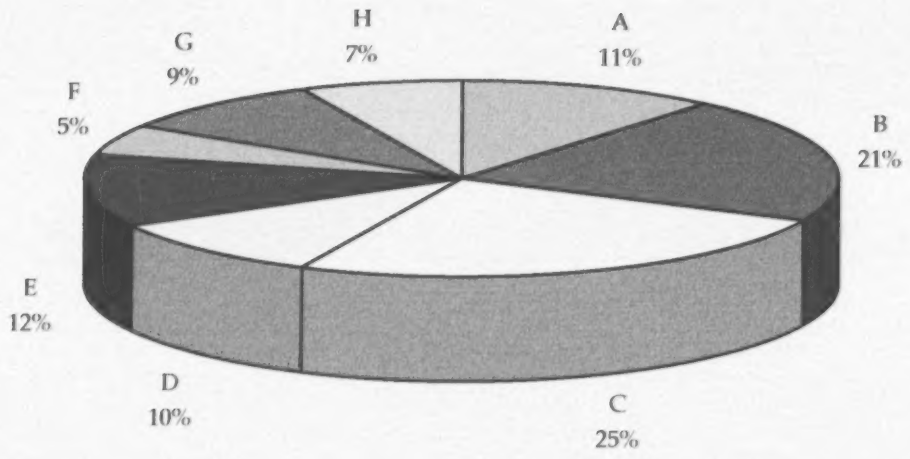
	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	30	10	0	22	NV	30	20	15	5	20	ND	NV	ND	17%

Task 23 Builds arches.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	35	45	50	56	NV	60	40	35	70	50	ND	NV	ND	49%

APPENDIX E

PIE CHART*



TITLES OF BLOCKS

BLOCK A	Common Occupational Skills	BLOCK E	Chimneys and Fireplaces
BLOCK B	General Masonry Practices	BLOCK F	Refractories and Corrosion Resistant Materials
BLOCK C	Masonry Systems	BLOCK G	Restoration
BLOCK D	Stone Systems	BLOCK H	Additional Masonry

*Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from 100 to 150 multiple-choice questions.

APPENDIX F

TASK PROFILE CHART — Bricklayer

BLOCKS	TASKS	SUB-TASKS				
A - COMMON OCCUPATIONAL SKILLS	1. Performs safety-related functions.	1.01 Maintains safe work environment.	1.02 Uses personal protective equipment (PPE) and safety equipment.			
	2. Uses and maintains tools and equipment.	2.01 Maintains tools and equipment.	2.02 Uses rigging, hoisting and lifting equipment.			
	3. Uses scaffolding.	3.01 Erects scaffolding.	3.02 Dismantles scaffolding.	3.03 Maintains scaffolding.		
	4. Organizes work.	4.01 Uses drawings, blueprints and specifications.	4.02 Plans daily tasks and activities.	4.03 Prepares job site and materials.	4.04 Protects surrounding areas.	
B - GENERAL MASONRY PRACTICES	5. Performs substrate preparation.	5.01 Prepares vertical substrates and foundations.	5.02 Applies parging.	5.03 Installs anchoring/tie systems.	5.04 Installs membrane and flashing.	5.05 Installs insulation.
	6. Constructs masonry.	6.01 Lays out wall and coursing.	6.02 Finishes joints.	6.03 Cleans new masonry surfaces.	6.04 Seals masonry surfaces.	
	7. Uses mortars, grouts and adhesives.	7.01 Mixes mortar, concrete and grout.	7.02 Uses mortars.	7.03 Uses concrete and grout.	7.04 Uses adhesives.	

BLOCKS	TASKS	SUB-TASKS		
C - MASONRY SYSTEMS	8. Builds masonry walls.	8.01 Builds non-load-bearing walls.	8.02 Builds load-bearing walls.	
	9. Builds horizontal masonry surfaces.	9.01 Prepares horizontal substrate.	9.02 Lays masonry units on horizontal surfaces.	
	10. Builds and installs prefabricated masonry units. **(NOT COMMON CORE)**	10.01 Builds prefabricated masonry. **(NOT COMMON CORE)**	10.02 Erects prefabricated masonry. **(NOT COMMON CORE)**	
	11. Installs surface-bonded masonry units.	11.01 Prepares substrate for surface-bonded masonry units.	11.02 Applies surface-bonded masonry units.	
D - STONE SYSTEMS	12. Builds stone walls.	12.01 Prepares stone.	12.02 Lays stone.	12.03 Damp cures walls.
	13. Installs stone cladding.	13.01 Prepares substrate for cladding.	13.02 Prepares stone for cladding.	13.03 Installs stones.

BLOCKS	TASKS	SUB-TASKS				
E - CHIMNEYS AND FIREPLACES	14. Builds chimneys.	14.01 Builds foundation supports for chimneys.	14.02 Lays masonry units to build chimneys.	14.03 Installs flue lining.	14.04 Installs related flashings.	14.05 Installs caps.
	15. Builds fireplaces.	15.01 Builds foundation for hearth, firebox, backup material and veneer.	15.02 Builds hearth, firebox and backup.	15.03 Installs dampers.	15.04 Builds smoke chambers.	15.05 Prepares existing fireplace for insert.
		15.06 Faces fireplaces and inserts.				
F - REFRACTORIES AND CORROSION RESISTANT MATERIALS	16. Installs and maintains refractories.	16.01 Prepares for installation of refractories and accessories.	16.02 Prepares mortar for refractories.	16.03 Installs refractories.	16.04 Removes existing refractories.	16.05 Repairs refractories.
	17. Installs and maintains corrosion resistant materials.	17.01 Prepares for installation of corrosion resistant materials and accessories.	17.02 Prepares mortar for corrosion resistant materials.	17.03 Installs corrosion resistant materials.	17.04 Removes existing corrosion resistant materials.	17.05 Repairs corrosion resistant materials.
G - RESTORATION	18. Rebuilds masonry work.	18.01 Disassembles unit masonry.	18.02 Prepares restoration work area.	18.03 Reinstalls masonry and accessories.		
	19. Repairs existing masonry work.	19.01 Removes deteriorated components.	19.02 Repoints joints.	19.03 Repairs masonry units.	19.04 Reinstalls masonry units and accessories.	
	20. Cleans and seals masonry surfaces.	20.01 Prepares surfaces.	20.02 Cleans existing masonry surfaces.	20.03 Applies sealants and coatings for restoration work.		

BLOCKS	TASKS	SUB-TASKS				
H - ADDITIONAL MASONRY	21. Installs glass blocks.	21.01 Prepares work area.	21.02 Lays glass blocks.			
	22. Installs ornamental and sculpted masonry.	22.01 Prepares for installation of ornamental and sculpted masonry.	22.02 Installs ornamental and sculpted masonry units.			
	23. Builds arches.	23.01 Prepares location.	23.02 Builds template.	23.03 Places template.	23.04 Installs arch masonry units.	23.05 Removes template.